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COMPLETE SPECIFICATION FOR THE INVENTION ENTITLED:

PESTICIDAL FORMULATIONS

The following statement is a full description of the invention including the best method of performing it known to us:

THIS INVENTION relates to a method of controlling ectoparasites and formulations for controlling ectoparasites on animals and has particular application to formulations suitable for use against blowfly strike on sheep.

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Various formulations are available for the treatment of external parasites on animals. Two of the most commonly used active ingredients are organophosphates and pyrethroids.

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Generally, pyrethroids have had little success in the treatment and prevention of sheep blowfly attack as they have no effect on the larvae of blowfly. For this reason, they have been mainly used for controlling lice.

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Previously, most parasiticide formulations have been either pour-ons or dips which concentrate on delivery of the parasiticide on to the skin layer of the animal, often causing irritation.

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There is a need for an ectoparasiticide formulation which is effective in the control of blowfly attack, which minimises discomfort and irritation to the animal and the user, and which can be supplied in a convenient form ready for use.

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It is an object of this invention to provide an improved formulation for and method of controlling ectoparasites.

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In one aspect the invention provides a formulation effective in controlling ectoparasites on non-human animals containing a parasiticide component and a non-aqueous component selected from the group comprising Pine oil, Soyabean oil, and Butyl dioxitol, the viscosity of the said formulation being such that it can be applied as a fine spray, and the non-aqueous component being such that the formulation adheres to the surface fleece, fur or hair of the animal.

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Butyl dioxitol is also known as 2-(2-butoxyethoxy)ethanol.



In another aspect the invention provides a method of controlling ectoparasite on non-human animals which consists of applying to the animal a formulation containing a parasitocidal component and a non-aqueous component selected from the group comprising Pine oil, Soyabean oil and Butyl dioxitol, the viscosity of the formulation being such that it can be applied in a fine spray.

In yet another aspect the invention provides an ectoparasitocidal formulation including a parasiticide component and a non-aqueous component selected from the group comprising Pine oil, Soyabean oil and Butyl dioxitol, such that the formulation, when applied, adheres to the surface fleece, fur or hair of the animal.

In a most preferred aspect the surface fleece is wool and the formulation adheres to the wool or wool grease. In which case Pine oil is the preferred non-aqueous component.

The non-aqueous component is an oily liquid which dissolves readily in the natural oils and greases produced by the animal, such as the lanolin in wool. Its presence means that the formulation is not readily dissolved in, or washed off by water.

It has been found that the inclusion of the non-aqueous component improves the adhesion and longevity of the formulation as it causes the formulation to bind strongly to the surface fleece, fur or hair of the animal and is not readily washed or dissolved away in the presence of water. It is particularly effective when the non-aqueous component is Pine oil and the formulation is applied to wool on sheep.

Furthermore, the presence of the non-aqueous component has the effect of reducing the volatility of the formulation. This has the advantage that there is reduced irritation to the user from the vapours or mist created in use.



Preferably, the formulation also includes a co-solvent which assists in providing a fine spray or an effective coating on the fleece or fur when applied by the use of a wick or roller.

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Suitably co-solvents include glycol ethers such as 2-methoxy-ethanol, 2(2-ethoxyethoxy) ethanol and monopropylene glycol.

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Preferably the parasiticide component comprises a mixture of a pyrethroid and an organophosphate insecticide.

Examples of suitable pyrethroids include cypermethrin, deltamethrin, permethrin, fenvalerate, alphacypermethrin and flumethrin.

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Examples of suitable organophosphate parasiticides include diazinon, chlorpyrifos,

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coumaphos and propetamphos.

All of these pyrethroids and organophosphate compounds are well known in the art.

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While it is not intended to limit the formulation to specific proportions of the non-aqueous component and organophosphate present it is preferred that the non-aqueous component is present in the ratio from 10 to 60% by weight and the organophosphate is preferably present as from 1 to 20% by weight to the total formulation. The pyrethroid may be present in any desired amount.

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The viscosity of the formulation is preferably less than 20 seconds Ford's No. 4 cup.

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These and other aspects of the invention, which will be considered in all its novel aspects, will be apparent from the following descriptions, which are given by example only.

Example 1

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Cypermethrin [90%]

%
w/v

11.30

%
w/w

11.36

Chlorpyrifos

1.15

1.15

Pine Oil

50.0

50.25

Mono-propylene glycol

to 100m

37.24

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Density at 20 C =0.995

Stable at 2 C for 24 hours.

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1. Measure the Pinechem 540 into a clean, dry production tank, add the Cypermethrin and Dursban and stir to dissolve.

2. Slowly add the mono-propylene glycol and stir to dissolve.

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Example 2

5		% w/w
	Butyl dioxitol	31.4
	Cypermethrin	11.8
	Chlorpyrifos	1.2
	monopropylene glycol	55.6

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Example 3

		% w/w	% w/v
15	Butyl dioxitol	31.4	30.0
	Cypermethrin	11.8	11.3
	Chlorpyrifos	1.2	1.15
	Soyabean oil	55.6	to 100 ml

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Example 4

		% w/w	U. F. 10002
25	Butyl dioxitol	31.4	
	Cypermethrin	11.8	
	Diazinon	1.2	
	Soyabean oil	55.6	

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Example 5

5		% w/w
	Butyl dioxitol	31.4
	Deltamethrin	5.0
10	Chlorpyrifos	1.2
	Soyabean oil	55.6

A trial using a formulation of the invention was made on lambs. One hundred lambs were treated with the formulation at docking while one hundred were left untreated. Within two weeks one third of the control animals were struck by blowfly while none of the treated animals were affected. Treated animals continued to be protected for six weeks after the treatment was applied.

The formulation may be applied to the outer surface of the fleece, fur, hair or wool on an animal's back by way of a fine spray or it may be applied by the use of a wick or roller.

Preferably, the formulation is applied to the entire back or hind quarters of the animal. However, this formulation and method enables the control of flystrike on other parts of the body which are susceptible to attack by flies or the like. Such an application generally provides protection for about 4-15 weeks.

It has been found that the formulations which have Soyabean oil as the non-aqueous component are particularly suitable for application to cattle, deer and other similarly short-haired animals while formulations containing Pine oil as the non-aqueous component are especially preferred for application to sheep. The Pine oil does not discolour the wool and is readily taken up by the wool grease.

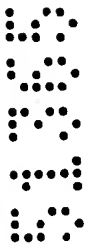
The adhesive properties of the formulation acts to repel blowflies and the like by maintaining the activity of the pyrethroid on the surface of the animal. The organophosphate insecticide acts as background protection killing any maggots. The

parasiticide being on the surface of the wool or surface fleece also prevents any irritation on the skin layer of the animal.

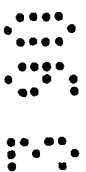
5 The user of this formulation is advantaged by the fact that the low volatility results in reduced irritation and reduced smell from the spray.

Finally, it will be appreciated that various other alterations and modifications may be made to the foregoing without departing from the scope of this invention.

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THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

- 5 1. A formulation effective in controlling ectoparasites on non-human animals containing a parasiticide component and a non-aqueous component selected from the group comprising Pine oil, Soyabean oil, and Butyl dioxitol, the viscosity of the said formulation being such that it can be applied as a fine spray, and the non-aqueous component being such that the formulation adheres to the surface fleece, fur or hair of the animal.
- 10 2. A formulation according to claim 1 which further includes a co-solvent.
3. A formulation according to claim 2 in which the co-solvent is selected from the group containing glycol ethers.
- 15 4. A formulation according to any preceding claim in which the viscosity of the said formulation is less than 20 seconds Ford's No. 4 cup.
- 20 5. A formulation according to any preceding claim in which the parasiticide component comprises a mixture of a pyrethroid and an organophosphate parasiticide.
- 25 6. A formulation according to claim 5 in which the pyrethroid is selected from the group containing cypermethrin, deltamethrin, permethrin, fenvalerate, alphacypermethrin and flumethrin.
- 30 7. A formulation according to claim 5 in which the organophosphate parasiticide is selected from the group containing diazinon, chlorpyrifos, coumaphos and propetamphos.
- 35 8. A method of controlling ectoparasites on non-human animals which consists of applying a formulation as defined in any of the preceding claims to the animal by way of a fine spray.



9. A method of controlling ectoparasites on non-human animals which consists of applying a formulation as defined in any one of claims 1-7 to the animal by way of a wick or a roller.

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10. A method of controlling ectoparasites on non-human animals which consists of applying a formulation as defined in any one of claims 1-7 to the animal as a pour-on formulation.

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11. A method according to any of claims 8 to 10 in which the said animal is a sheep.

12. A method according to any of claims 8 to 10 in which the ectoparasite is a blowfly.

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13. A formulation according to claim 1 substantially as herein defined with particular reference to any one of the examples.

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14. A method of controlling ectoparasites on non-human animals according to any of claims 8 to 10 substantially as herein described.

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ANCARE DISTRIBUTORS LIMITED

By their Patent Attorneys

CULLEN & CO.

